7 **DE Admin Code** 1138
Section 6

Emission Standards for Chromium Electroplating and Anodizing Tanks

Public Workshops

April 23 & May 1, 2013

Blue Skies Delaware; Clean Air for Life

- **Handouts**
- **Key Definitions**
- **Acronyms**

Acronyms

CFR	Code of Federal Regulations
Cr+3	Trivalent Chromium
Cr+6	Hexavalent Chromium
EPA	Environmental Pollution Agency
HAPs	Hazardous Air Pollutants
MACT	Maximum Achievable Control Technology
O/O	Owner or Operator
PFOS	Perfluorooctane Sulfonic Acid
RTR	Risk & Technology Review

A Brief History of the

Clean Air Act

and

Air Toxics Regulations

1963

First album released 3/22/63

- **Congress** enacts the original **Clean Air Act of 1963**
  - **Establishes funding to**
    - To develop a national program to address air pollution related environmental problems

AND

1963

- **Congress** enacts the original **Clean Air Act of 1963**
  - **Establishes funding to**
    - To conduct research into techniques to minimize air pollution

JFK Buried
11/25/63

1970

- **Congress** enacts a major extension of the **Clean Air Act**
- **Establishing . . . . .**
  - Environmental Protection Agency

12/2/70

First Earth Day
4/22/70

1970

- **Congress** enacts a major extension of the **Clean Air Act**
- **Establishing . . . . .**
  - Authority to develop **NAAQS**

National
Ambient
Air
Quality
Standards

ABC debuts “MNF”
9/21/70

1970

- **Congress** enacts a major extension of the **Clean Air Act**
- **Establishing . . . . .**
  - Requirements for **SIPs**

    State
    Implementation
    Plans

Ra II sails Atlantic
5/17 to 7/12/70

1970

- **Congress** enacts a major extension of the **Clean Air Act**
- **Establishing . . . . .**
  - Authority to **NSPS**

New
Source
Performance
Standards

First women's only tournament
9/23/70

1970

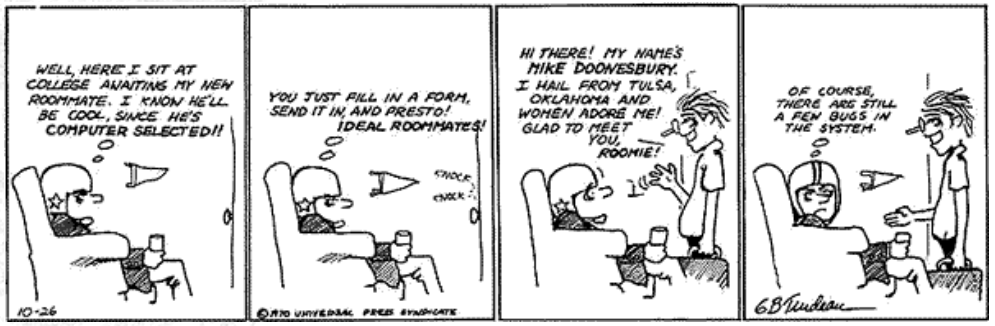
- **Congress** enacts a major extension of the **Clean Air Act**
- **Establishing . . . . .**
  - Requirements for control of **motor vehicle** emissions

4/1/70
AMC's Gremlin debut

1970

- **Congress** enacts a major extension of the **Clean Air Act**
- **Establishing . . . . .**
  - Authority to develop **NESHAPS**

National
Emission
Standards for
Hazardous
Air
Pollutants



Doonesbury debuts 10/26/70

EPA's

Initial Development of

NESHAPS

1970 – 1990

- **Development of NESHAPS . . . . .**

Congress Mandated EPA to

- **Identify** toxic air pollutants (i.e. HAPs)
- **Establish** a numerical emission limits and **promulgate** standards that would protect human health from any adverse effects of hazardous air pollutants

1973 to 1990 NESHAPS

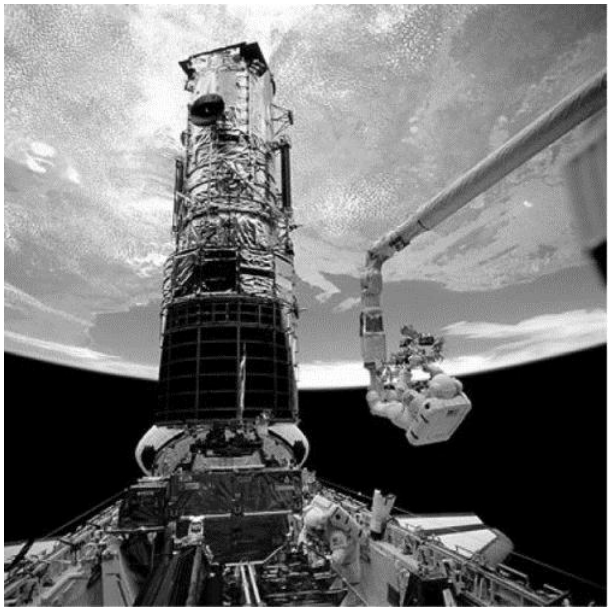
- Seven HAPs identified
- **21** NESHAPS promulgated

	’73 – ’80	’81 – ’85	’86 – ’90	’91 – ’92
Arsenic			3	
Asbestos		1		
Benzene		1	4	
Beryllium	2			
Mercury	1			
Radionuclides			7	1
Vinyl chloride	1			

1990

- **Congress** enacts amendments to the **Clean Air Act** that **significant changed** how EPA develops and promulgates NESHAPs

Hubble launched 4/24/90



Clean Air Act Amendments of 1990

- **Congress** identified 189 Hazardous Air Pollutants or HAPs

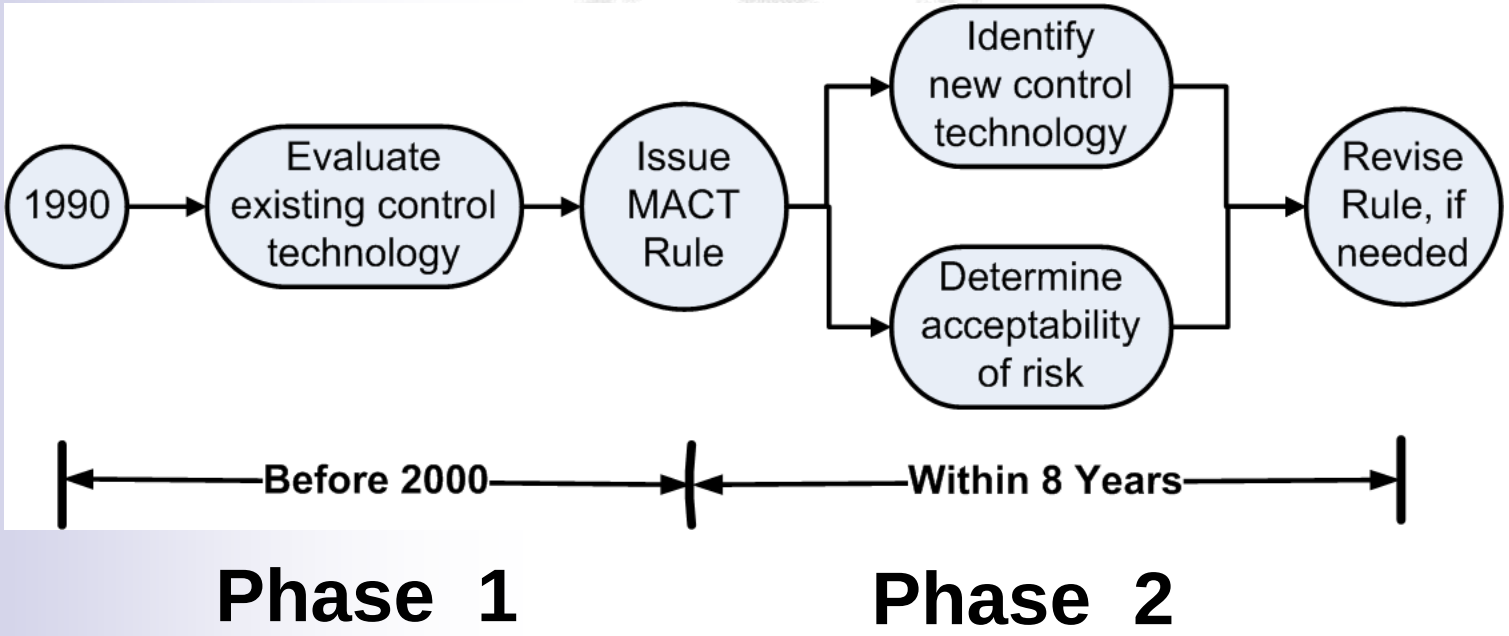
  - Including CHROMIUM Compounds

Clean Air Act Amendments of 1990

- **Congress** directed the EPA to **identify emission sources** of those 189 HAPs
  - July 16,1992 - EPA published its initial listing of source categories including
    - Chromium electroplating operations
    - Chromium anodizing operations

Clean Air Act Amendments of 1990

- **Congress** even prescribed EPA's rule-making "path forward" – A 2-Phase Process



Federal Chromium Electroplating Rule

40 CFR Part 63 Subpart N - PHASE 1

July 16, 1992

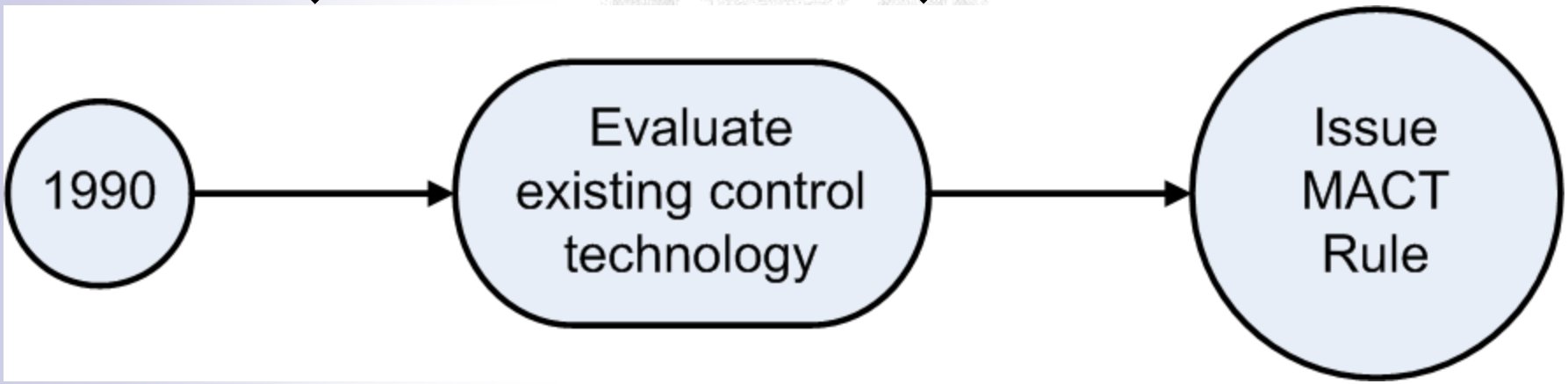
Chromium Electroplating Listed

Dec. 16, 1993

Technology Review Completed

Jan. 25, 1995

MACT Rule Finalized



Which Brings

Us to

Tonight's

Public Workshop

Federal Chromium Electroplating Rule

40 CFR Part 63 Subpart N - PHASE 2

Jan. 25, 1995

MACT Rule Finalized

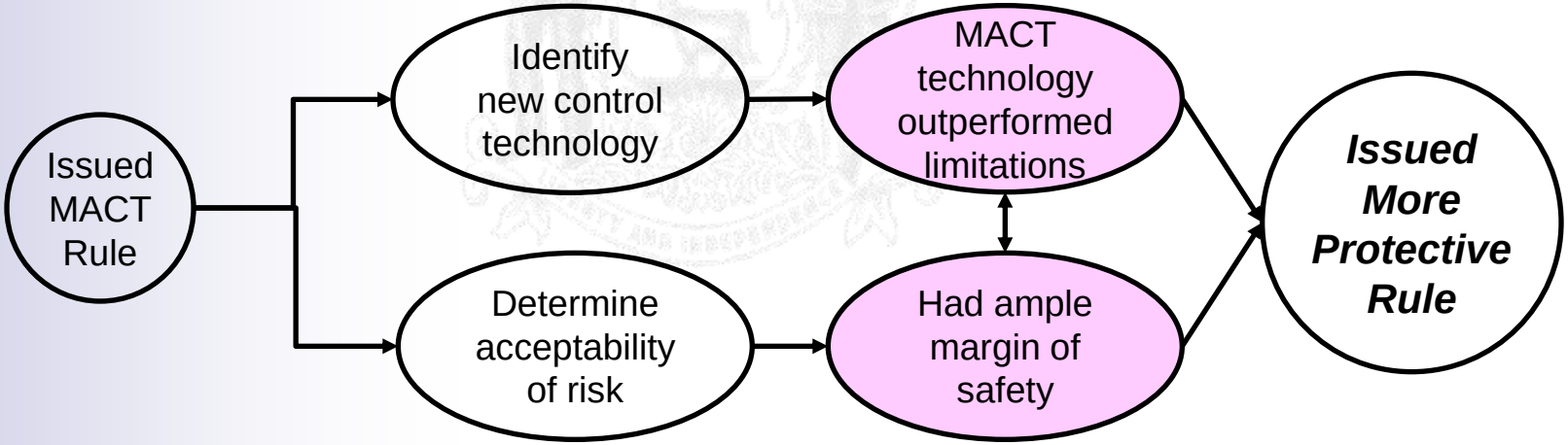
Risk & Technology Reviews (**RTR**) Completed

Oct. 21, 2010

Feb. 8, 2012

Sept 19, 2012

Sub N Revision Finalized



Workshop Objectives

Address the following - - -

- **NO changes** to the current "MACT" requirements
- **New** requirements to address **R T R** changes
  - Reduced emission limitations
  - Banned PFOS-based fume suppressants
  - Added housekeeping procedures
  - Added new compliance dates (Federal/Delaware)
  - Required initial compliance demonstration with reduced emission limitations
  - Other related changes

Workshop Objectives

Address the following - - - (Cont'd)

- New **MALFUNCTION** Focus
  - Deleted the exemption during a malfunction
  - Added an affirmative defense provision
  - Revised recordkeeping focus for malfunctions
- **Miscellaneous** Federal Changes
- **Cosmetic** Delaware Changes
- Regulatory path forward
- Regulatory web page

R T R Changes

Reduced Emission Limitations

Reduced emission limitations

- Emission limitations vary depending on
  - Type of operation
  - Size of facility
  - When construction began
  - Type of control technique used

Reduced emission limitations

- Emission limitations vary depending on
  - Type of operation
    - Hard Cr^{+6} electroplating
    - Decorative Cr^{+6} electroplating
    - Cr^{+6} anodizing
    - Decorative Cr^{+3} electroplating

Reduced emission limitations

- **Emission limitations vary depending on**
  - **Size of facility**
    - **Large (Rectifier potential capacity ≥ 60 million amp-hrs/year)**
    - **Small (< 60 million amp-hrs/year)**

Reduced emission limitations

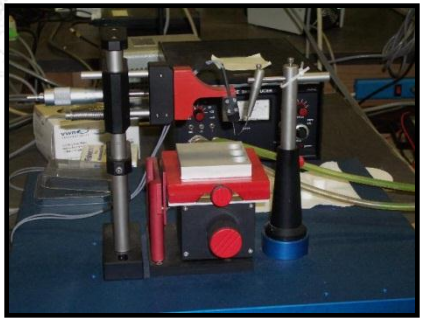
- Emission limitations vary depending on
  - When construction began
    - Existing Source (Construction began ≤ Feb. 8, 2012)
    - New Source (Construction began > Feb. 8, 2012)

Reduced emission limitations

- **Emission limitations vary depending on**
  - **Type of control technique used**
    - **Add-on control device**
    - **Fume Suppressants (surface tension)**

Composite Mesh Pad

Stalagmometer



Tensiometer

Reduced emission limitations

- **In Delaware, we find . . .**
  - **Type of operation – Hard Cr^{+6} Electroplating**
  - **Size of operation – Both Small & Large**
  - **When construction began – All Existing**
  - **Type of control technique used – Both add-on control device & fume suppressants**

Reduced emission limitations

- **Current MACT emission limitations for existing Delaware sources with add-on control device**

This emission limitation **continues to apply** through Sept. 18, 2014

Using Add-on Control Devices		**MACT** Limitation (mg/dscm)
Small Hard Plating w/ S/U ≤ 12/16/93	Existing	0.030
Small Hard Plating w/ S/U > 12/16/93	Existing	0.015
Large Hard Plating	Existing	0.015

Reduced emission limitations

- **Future RTR emission limitations for existing Delaware sources with add-on control device**

This emission limitation **applies beginning on** Sept. 19, 2014

Using Add-on Control Devices		**MACT** Limitation (mg/dscm)	**RTR** Limitation (mg/dscm)
Small Hard Plating w/ S/U ≤ 12/16/93	Existing	0.030	0.015
Small Hard Plating w/ S/U > 12/16/93	Existing	0.015	0.011
Large Hard Plating	Existing	0.015	0.011

Reduced emission limitations

- **Future RTR emission limitations for new Delaware sources with add-on control device**

Using Add-on Control Devices		MACT Limitation (mg/dscm)	RTR Limitation (mg/dscm)	RTR Limitation **If NEW Source**
Small Hard Plating w/ S/U ≤ 12/16/93	Existing	0.030	0.015	NA
Small Hard Plating w/ S/U > 12/16/93	Existing	0.015	0.011	0.006
Large Hard Plating	Existing	0.015	0.011	0.006

This emission limitation **applies to sources**, if construction began > Feb. 8, 2012

Reduced emission limitations

- **Current MACT emission limitations for existing Delaware sources controlling surface tension**

This emission limitation **continues to apply** through Sept. 18, 2014

Controlling Surface Tension		**MACT** M A S T (dynes/cm)
Stalagmometer	Existing	45
Tensiometer	Existing	35

M A S T – Maximum Allowable Surface Tension

Reduced emission limitations

- **<u>Future RTR</u> emission limitations for existing Delaware sources controlling surface tension**

This emission limitation **<u>applies beginning on</u>** Sept. 19, 2014

Using Add-on <u>Control Devices</u>		**MACT** Limitation (mg/dscm)	**RTR** Limitation (mg/dscm)
Small Hard Plating w/ S/U <u>≤</u> 12/16/93	Existing	0.030	0.015
Small Hard Plating w/ S/U > 12/16/93	Existing	0.015	0.011

M A S T – Maximum Allowable Surface Tension

Reduced emission limitations

- **Future RTR emission limitations for new Delaware sources controlling surface tension**

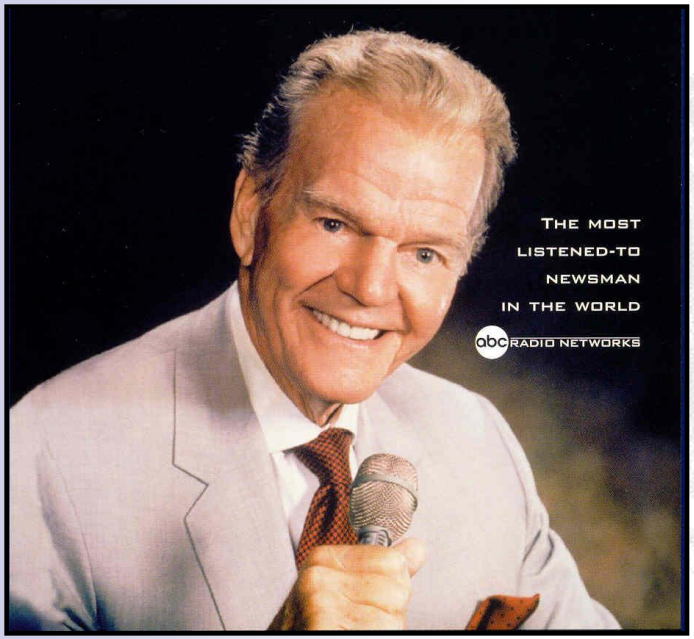
Controlling Surface Tension		**MACT** M A S T (dynes/cm)	**RTR** M A S T (dynes/cm)	**RTR** M A S T **If NEW Source**
Stalagmometer	Existing	45	40	40
Tensiometer	Existing	35	33	33

This emission limitation **applies to sources**, if construction began > Feb. 8, 2012

M A S T – Maximum Allowable Surface Tension

Reduced emission limitations

- "**. . . and now you know the rest of the story.**"



Current and Future Emission Limitations under Section 6 of Regulation 1138

	Type of Source (a)	Emission Limitations: Currently Under MACT (mg/dscm)	Emission Limitations: New Under RTR (mg/dscm)
Small Hard Electroplating With startup on or before 12/16/93	Existing	**0.030** 6.3.3.1.1.1 6.3.3.2.1.1	**0.015** 6.3.3.1.2.1 6.3.3.2.2.1
All other Hard Electroplating	Existing	**0.015** 6.3.3.1.1.2 6.3.3.2.1.2	**0.011** 6.3.3.1.2.2 6.3.3.2.2.2
Decorative Electroplating w/ chromic acid	Existing	**0.010** 6.3.4.1.1	**0.007** 6.3.4.2.1
Chromium anodizing	Existing	**0.010** 6.3.4.1.1	**0.007** 6.3.4.2.1
All Hard Electroplating	New	- -	**0.006** 6.3.3.1.3.1 6.3.3.2.3.1
Decorative Electroplating w/ chromic acid	New	- -	**0.006** 6.3.4.3.1
Chromium anodizing	New	- -	**0.006** 6.3.4.3.1

a – Note that the definition of new and existing affected sources has been changed from the original MACT Standard.

	Maximum Allowable Surface Tension: Currently Under MACT (dynes/cm)	Maximum Allowable Surface Tension: New Under RTR (dynes/cm)
All Electroplating & Anodizing using a stalagmometer	**45** 6.3.3.1.1.3 6.3.3.2.1.3 6.3.4.1.2	**40** 6.3.3.1.2.3 6.3.3.1.3.2 6.3.3.2.2.3 6.3.3.2.3.2 6.3.4.2.2 6.3.4.3.2
All Electroplating & Anodizing using a tensiometer	**35** 6.3.3.1.1.3 6.3.3.2.1.3 6.3.4.1.2	**33** 6.3.3.1.2.3 6.3.3.1.3.2 6.3.3.2.2.3 6.3.3.2.3.2 6.3.4.2.2 6.3.4.3.2

0.015
6.3.3.1.2.1
6.3.3.2.2.1

R T R Changes

Banned PFOS-based fume suppressants

PFOS – Perfluorooctane sulfonic acid

Banned PFOS-based fume suppressants

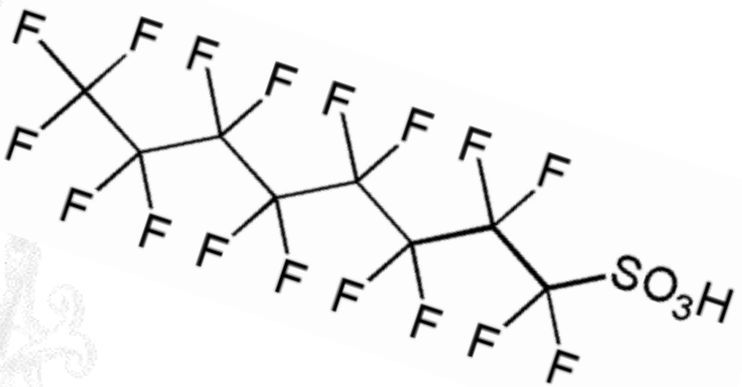
6.3.3.1.4+

- Prohibit the addition of PFOS-based fume suppressant to tank baths ≥ Sept. 21, 2015

6.2.1

- Affected fume suppressants contain ≥ 1% PFOS by weight

- EPA reported PFOS as
  - Persistent
  - Bio-accumulative
  - Toxic characteristics



PFOS – Perfluorooctane sulfonic acid

R T R Changes

Added Housekeeping Procedures

Added Housekeeping Procedures

- **At all times . . .**
  - **Store and transport all substances that contains Cr^{+6} in a closed container**
  - **Store all substances that contains Cr^{+6} within an enclosed storage place**

1 of Table 6-2

Added Housekeeping Procedures

- **Minimize spills of bath solution that drips or drains from plated parts as they are removed from the bath by . . .**
  - **Collecting and returning solution – or –**
  - **Installing dip trays to collect and return – or –**
  - **Collecting and treating solution in onsite WWTP**

2 of Table 6-2

Added Housekeeping Procedures

- **Prior to spraying plated parts to remove excess bath solution . . .**
  - **Install splash guards to minimize overspray**
  - **Collect and return the Cr^{+6} laden liquid to the tank bath**

3 of Table 6-2

Added Housekeeping Procedures

- **Within 1 hour of a spill of any Cr^{+6} laden substance . . .**
  - **Begin clean up of the substance – or –**
  - **Contain the spill of the substance**

4 of Table 6-2

? 1 Hr ?

Why wait so long?

What should this be?

expeditiously as practicable?

Immediately?

Added Housekeeping Procedures

- **Clean all surfaces at least once every . . .**
  - **7 day (if any plating/anodizing occurs) – or –**
  - **40 hours of any operations BY . . .**
    - **HEPA vacuuming,**
    - **Hand-wiping with a damp cloth,**
    - **Wet mopping,**
    - **Hosing down with potable water that is collected in a wastewater collection system, and/or**
    - **Other cleaning method approved by the Department**

5 of Table 6-2

Added Housekeeping Procedures

- **Prior to beginning the buffing, grinding, or polishing operation . . .**
  - **Separate the buffing, grinding, or polishing operations from any affected electroplating or anodizing operation**

6 of Table 6-2

  - ***Stay for the Section 10 public workshop ! !***

Dry Polishing

Vs.

Wet Polishing

Added Housekeeping Procedures

- **At all times . . .**
  - **Store,**
  - **Dispose,**
  - **Recover, – or –**
  - **Recycle**

Cr^{+6} substances or Cr^{+6} wastes using practices that do not lead to fugitive dust

7 of Table 6-2

R T R Changes

Added new compliance dates (Federal / Delaware)

Added new compliance dates

	Delaware Reg. 1138 Section 6	Federal 40 CFR Part 63 Subpart N
For Existing Sources	**6.4.1.1**	
New RTR Emission Limitations	Sept. 19, 2014	Sept. 19, 2014
For New Sources	**6.4.1.2**	
New RTR Emission Limitations	Effective Date	Sept. 19, 2012
For ALL Sources	**6.4.1.8**	
New RTR Housekeeping Procedures	Effective Date	Mar. 19. 2013
Prohibition of PFOS-based Fume Suppressants	Sept. 21, 2015	Sept. 21, 2015

6.3.3.1.4

Estimated effective date ~ Aug. 11 to Nov. 11, 2013

R T R Changes

Required initial compliance demonstration With newly reduced emission limitations

Required compliance demonstration

- **Performance testing to demonstrate initial compliance**
  - **O/O shall operated the affected source under conditions the Department specifies to be representative during the performance test**

6.5.1

  - **O/O shall provide Department records necessary to determine operating conditions for the performance test**

6.5.1

Required compliance demonstration

- **Performance testing to demonstrate initial compliance (not new)**
  - **O/O shall conduct performance test within 180 days of compliance date**

3.7.1.2

  - **O/O shall notify Department at least 60 days prior to date of performance test**

6.8.4.1

Required compliance demonstration

- **Exemptions from performance testing**
  - **Affected source does decorative electroplating with Cr^{+3} (not new)**

6.4.2.3

  - **Affected sources controls emission with fume suppressant and O/O accepts 40/33 dynes/cm emission limitation (not new, but limit lower)**

6.4.2.2

  - ~~**Performance test conducted at startup to obtain an permit and testing occurred after Jan. 25, 1995**~~ **(new, but Federal only)**

Required compliance demonstration

- **Delaware testing exemption if . . .**

6.5.2.1

  - **Previous performance testing conducted within last 5 years**
  - **Same emission controls in place**
  - **Same representative operating conditions**
  - **Same required test methods used**
  - **Test report contains all required information**
  - **Sufficient information gathered to establish compliant operating parameters**

R T R Changes

Other R T R – related changes

Other R T R – related changes

- **Revised maximum allowable mass emission rate (MAMER) to be consistent with the new RTR emission limitations** (an alternative compliance demonstration for enclosed electrolytic tanks)

6.5.6+

- **Required measurement and reporting of emissions in terms of "total chromium" only** (previously Cr+6 could be also used)

6.5.3.1

Other R T R – related changes

- **Recordkeeping (RK) requirements**
  - **Fume suppressants must be identified by product name and manufacturer** 6.7.2.13
  - **No recordkeeping requirements for the 7 housekeeping procedures** 6.7.2.17

- **Semi-annual Exceedance Report required IF. . .** 6.8.8.2.1
  - **Total duration of excess emissions ≥ 1% total operating time OR**
  - **Total duration of malfunctions ≥ 5% total operating time** (used to be AND)

6.2.1

“Malfunction” means a sudden, infrequent, and not reasonably preventable failure of air pollution control and monitoring equipment, process equipment or a process to operate in a normal or usual manner

New “malfunction” requirements

Deleted
MACT Exemption from Complying with Emission Limitations During a Malfunction

Deleted malfunction exemption

- **Previous MACT compliance requirement**

6.3.2.1

The emission limitations in 6.3 of this regulation apply during tank operation as defined in 6.2 of this regulation, and during periods of startup and shutdown as these are routine occurrences for affected sources subject to 6.0 of this regulation. The emission limitations do not apply during periods of malfunction, but the operation and maintenance practices that are required in 6.3.6 of this regulation must be followed during malfunctions.

Deleted malfunction exemption

- **Federal R T R compliance requirement**

6.3.2.1 The emission limitations in 6.3 of this regulation apply during tank operation as defined in 6.2 of this regulation, and during periods of startup and shutdown as these are routine occurrences for affected sources subject to 6.0 of this regulation. . . . *[Affirmative defense provisions added]* . . . ~~The emission limitations do not apply during periods of malfunction, but the operation and maintenance practices that are required in 6.3.6 of this regulation must be followed during malfunctions.~~

Consistent with other recent Federal rulemakings

Deleted malfunction exemption

- **Delaware R T R compliance requirement**

6.3.2.1

The emission limitations in 6.3 of this regulation apply during tank operation as defined in 6.2 of this regulation, and during periods of startup and shutdown as these are routine occurrences for affected sources subject to 6.0 of this regulation. <u>The emission limitations in 6.3 also apply during periods of malfunction.</u>

. . . *[Affirmative defense provisions added]* . . .

~~The emission limitations do not apply during periods of malfunction, but the operation and maintenance practices that are required in 6.3.6 of this regulation must be followed during malfunctions.~~

New “malfunction” requirements

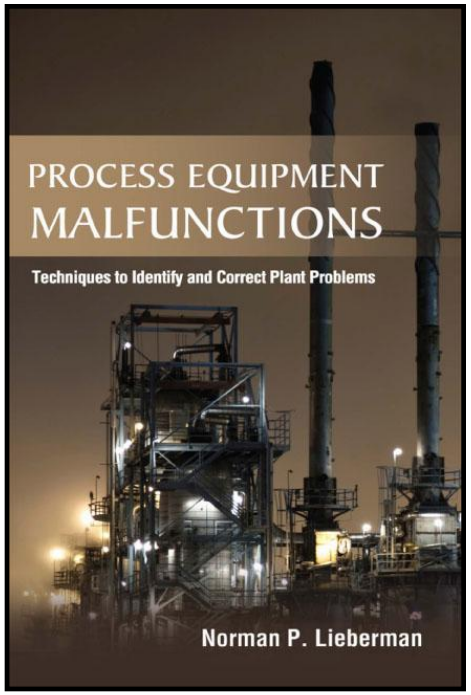
Added an affirmative defense provisions, when an exceedance occurs during a malfunction

6.2.1

“Affirmative defense” means, in the context of an enforcement proceeding, a response or a defense put forward by a defendant, regarding which the defendant has the burden of proof, and the merits of which are independently and objectively evaluated in a judicial or administrative proceeding.

Added affirmative defense provision

- EPA recognized . . .
  - Impossible to identify every conceivable malfunction event
  - Problematic to specify an alternative emission limitation during a malfunction (vs. during normal operation)
  - Even with the best planning, preparation, operation & maintenance, a failure can occur



Added affirmative defense provision

- EPA provided *[thru 6.3.2.1]* . . .
  - O/O the opportunity to assert an affirmative defense to a claim for civil penalties for violations of standards that were caused by a malfunction

6.3.2.1

  - The process and criteria for the O/O to assert this defense

6.3.2.1.1

  - The reporting requirements

6.3.2.1.2

Added affirmative defense provision

- **To assert an affirmative defense**
  - **The assertive defense must meet all the criteria/requirements** (6.3.2.1.1)
  - **The O/O must submit a written affirmative defense report with all necessary supporting documentation with the next periodic report** (6.3.2.1.2)
  - **Penalties may still be assessed, if the O/O fails to meet the burden of proving all criteria/requirements are met** (6.3.2.1)

Added affirmative defense provision

- **Criteria/requirements for an affirmative defense**

6.3.2.1.1

  - **Violation was caused by a sudden, infrequent, and unavoidable failure**
  - **Repairs were made as expeditiously as possible**
  - **Frequency, amount, and duration of the violation were minimized to the maximum extent practicable**
  - **If the violation resulted from a bypass of control equipment or a process, then the bypass was unavoidable to prevent loss of life, personal injury, or severe property damage**
  - **All possible steps were taken to minimize the impact of the violation**

Added affirmative defense provision

- **Criteria/requirements – cont.**

6.3.2.1.1

  - **All emissions monitoring and control systems were kept in operation, if at all possible**
  - **All of the actions in response to the violation were documented by properly signed, contemporaneous operating logs**
  - **At all times, the affected sources were operated in a manner consistent with good practices for minimizing emissions**
  - **A written root cause analysis was prepared**

New “malfunction” requirements

Revised Recordkeeping Focus for Malfunctions

Revised Recordkeeping

- **Previous MACT malfunction recordkeeping**

  - **O/O shall keep the following records . . .**

6.7.2.4

Records of actions taken during periods of malfunction when such actions are inconsistent with the operation and maintenance plan

Revised Recordkeeping

- **Federal RTR malfunction recordkeeping**

6.7.2.4

Records of actions taken during periods of malfunction to minimize emissions in accordance with 6.3.1.2 of this regulation, including corrective actions to restore malfunctioning process, air pollution control, and monitoring equipment to its normal or usual manner of operation

Miscellaneous Federal Changes

Misc. Federal Changes

- 6.3.1.2 Clarified that sources are not required to exceed applicable emission limitations
- 6.3.5.1 Required that the wetting agent must be an ingredient of the Cr^{+3} bath components as packaged
- 6.4.3 Provided option to install continuous pressure monitoring vs. daily log
- 6.2.2+ Add use of Method 306A as an alternative to Method 306 during performance testing

Misc. Federal Changes

- **Required electronic submittal of performance test results**

6.8.6.3

  - Provided mechanism for accessing WebFIRE for the submittal via the Central Data Exchange www.epa.gov/cdx

  - Provided format for submittal of data using the Electronic Reporting Tool www.epa.gov/ttn/chief/ert/index.html

Cosmetic Delaware Changes

Cosmetic Delaware Changes

- provisions of ~~Section~~ 6.0 of this regulation
- component ~~must~~ shall be identified
- 50 to 100 grams per liter ~~(g/L)~~ (g/l)
- emission limitations of ~~5.0~~ 6.0 of this regulation
- once every ~~four~~ eight hours of tank operation
- relevant emission limitation,

Miscellaneous Items

Compliance Assistance Tools

- **Notification of compliance status**
- **Notification of performance test**

NOCS

The owner or operator of an affected source shall submit a notification of compliance status no later than 60 days following the performance test.

If no performance test is required, the owner or operator shall submit a notification of compliance status no later than 30 days following the affected sources compliance date.

Example

Notification of Performance Test

If the source is required to conduct a performance test, the owner or operator of an affected source shall submit to the Department a notification of the owner or operator's intention to conduct a performance test at least 60 calendar days before the performance test is initially scheduled to begin .

Example

Expected Path Forward

- Publish proposed regulation in Delaware Register of Regulation – June 1, 2013
- Public hearing in Dover – June 27, 2013
- Publish final regulation in Delaware Register of Regulation – Aug - Nov 1, 2013
- Regulation effective date – Aug - Nov 11, 2013

For More Information on Section 6

- Contact Jim Snead
  - (302) 323-4542
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For the latest information,
follow the ongoing development on

Section 6 Regulatory Web Page

http://www.dnrec.delaware.gov/whs/awm/Info/Regs/Pages/Section6RTR.aspx